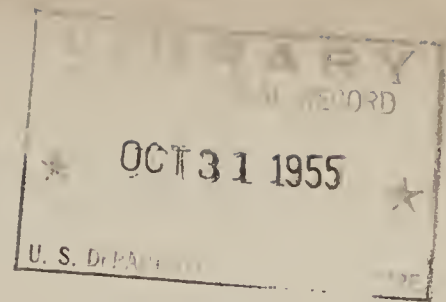


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UNITED STATES DEPARTMENT OF AGRICULTURE
Rural Electrification Administration
Telephone Engineering Division



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Telephone Engineering Newsletter

Newsletters are intended to provide a means of answering questions that arise in the field and to advise the field of new developments. They are not intended to be instructions nor to replace in any respect the presently-approved channels for establishing requirements and procedures. Suggestions for subjects will be gladly received.

Polyethylene Covered Line Wire Trials

The first use of polyethylene covered line wire will be made about March 4 by the Garden Valley Telephone Company, Erskine, Minnesota. Two parallel subscriber lines, each one mile long, will be constructed. One circuit will be .109 inch, grade 135 steel wire and the other .080 inch, 30 percent copperweld. In these installations both wires of a pair will be insulated. The Dickey Rural Telephone Mutual Aid Corporation at Ellendale, North Dakota, has also agreed to construct a subscriber line using polyethylene covered line wire. One-half of the mileage of the line will be .109 inch, 135 grade steel and the other half will be .080 inch, 30 percent copperweld. Three and one-half miles of the circuit will be attached to a Bell System line. The remainder will be used on the Dickey Telephone Corporation line on class 10 poles. Aluminum armor rods will be applied over the insulation at points of support which will be one bolt clamp at both transposition and non-transposition points. The insulated line wire will be supplied without cost by Indiana Steel and Wire Company and the Copperweld Steel Company. The .109 steel wire in both the Dickey and the Garden Valley work has a 21 mil thickness of polyethylene. The copperweld wire has a 15 mil thickness of polyethylene. The wire has been shipped to the job and construction on the Dickey project will begin possibly late in March. The insulated line wire for this construction will be supplied by the Indiana Steel and Wire Company and the Copperweld Steel Company without cost to the borrowers. A third trial of insulated line wire is in the planning stage, using ten miles of single .109 inch, 135 grade wire insulated with polyethylene 15 mils in thickness. The test is to determine the suitability of insulated steel wire in an area where bare galvanized steel wire deteriorates too rapidly to be satisfactory. A telephone company in the Gulf Coast area has been contacted as a possible user. This will also be given to the user without cost by the American Steel and Wire Company.

New Splicing Specifications for Plastic Cable

The REA standard PC-2 for the splicing of thermoplastic insulated, thermoplastic sheathed cables is being revised and the revised version should be distributed in March. The chief revisions are: each conductor joint is covered by a filled plastic splicing sleeve; sheath openings are shortened; and desiccant should not be used.

Multi-Pair Distribution Wire

A section of the Telephone Engineering and Construction Manual to be known as Section 633, "Multi-Pair Distribution Wire" has been prepared and should be ready for distribution in a few weeks. This wire is composed of six pair of 19 gauge plastic insulated conductors with a .109 inch, grade 190 steel support wire with a plastic insulation. This section will provide drawings showing the designs to be used in construction. Accessories for use with this wire will be included in the "List of Materials Acceptable for Use on Telephone Systems of REA Borrowers" about the same time as the issuance of Section 633. The accessories to be listed includes terminals; mounting brackets; clamps; wire guards; splicing sleeves; deadend sleeves; loading coils, cases and mounting brackets. These items permit a complete installation and are presently available from manufacturers.

Fuseless Station Protectors

A fuseless station protector (Reliable Electric Company No. 700) suitable for installation outdoors where the subscriber line contains no open wire has been added to the "List of Materials".

Notes on Nationwide Dialing

The American Telephone and Telegraph Company has recently issued a volume entitled "Notes on Nationwide Dialing", 1955. The information in it should be of considerable interest to field engineers, consulting engineers and borrowers. Copies of this publication may be obtained from the local Bell Commercial representatives.

Economy by Use of Class 9 and 10 Poles

Class 9 and 10 poles comprise only 57 percent of the total pole usage to date in the REA telephone program, although lines carrying one or two circuits for which they are suitable comprise 72 percent of the total line mileage. This indicates that poles of stronger class than necessary are being used in too many instances.

Six Pair Cable Terminal Use Discontinued

The cost differential is not great enough to justify the continued use of the six pair terminal which restricts the flexibility of plant to such an extent that their use is uneconomical. This item has been eliminated from the "List of Materials Acceptable for Use on Telephone Systems of REA Borrowers."

Vibration Tests of Pre-Tied Splints

Extensive laboratory tests have been under way for several months on line wire ties made using the newly developed splint similar in shape to the V notch splint. This splint is tied to the insulator glass prior to being placed on the crossarm pin. The splint is then spiraled onto the line wire to complete the tie. Trial installations of these splints have been made at a few places and a more extensive installation is in the planning stage.

Remedy for Cable Dancing

Wrapping of the cable around the suspension strand has been found to minimize cable dancing due to wind. The spiraling is accomplished by removing the cable, strand and three bolt clamp from the through bolt and temporarily supporting the cable and strand by means of a winch, block and tackle or other appropriate method. A through bolt is placed in the middle hole of the three bolt cable clamp and used as a lever to wind the cable around the strand. The length of spiral nearest the pole should be approximately 20 feet in length when the spiraling operation is completed. The three bolt clamp is then replaced in position on the pole. The wrapping is done at alternate poles in the length of line where dancing has occurred. An Addendum to Section 635, "Aerial Cable Construction" describing this construction is about ready for issue. The wrapping apparently affects reaction of the cable to the wind in a manner that neutralizes the force that causes the dancing.

Protected Terminals Used Where Not Required

Telephone Engineering and Construction Manual Section 815, "Cable Circuit Protection", specifies where protected cable terminals should be installed. Attention is called to the fact that not all terminals on a project require protection under the requirements of this section. It has been noted that on some projects every terminal used was of the protected type.

Drop Wire Clamp Abrasion

Minimizing the abrasion of drop wire clamp bails that are placed on drive hooks by means of a metal grommet in the bail was mentioned in Newsletter No. 6, December 29, 1954. The Reliable Electric Company has announced that it now has available a grommet for this purpose. The grommet is made of hard copper alloy and is in the form of an eyelet that may readily be inserted in the bail of a drop wire clamp. Vibration tests indicate that better resistance to abrasion is obtained when the grommet is tight in the bail. It can be made tight within the bail by squeezing the lip edges down with pliers. When the grommet was tight in the bail the test life was seven times that of the bail without the grommet. The Reliable Electric Company catalog number is 5518. They are shipped 25 to a box complete with installation instructions. Prices are not yet available.

Microwave Subscriber Line Trial in Louisiana

The Lafourche Telephone Company in Louisiana has on trial for REA a subscriber microwave installation between Grand Isle and Belle Pass, a distance of about 13 miles over marsh land. Three telephone stations are served at Belle Pass from the unattended dial central office at Grand Isle by utilizing operating frequencies of 910 and 930 megacycles. The equipment is of Budelman manufacture using carrier for channelizing. Helical type antenna are used, the one at Grand Isle being on an existing 100 foot tower and the one at Belle Pass being on a 55 foot pole. The installation has been in service over three months without trouble of any kind.

Construction Contract, Form 511

The revised Construction Contract, Form 511 is now being printed and is scheduled for distribution to REA field engineers on March 31, 1955.